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EUPHORBIA SPECIES FROM THE FLORA
ZAMBESIACA AREA

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(With Plates I-V.)

Euphorbia malevola Leach, sp. nov.

Euphorbia ? *tortistyla* N.E. Br. sensu White, Dyer and Sloane, The Succulent Euphorbieae, 2: 739, quoad specim. Christian et figs. 829 and 830 (1941).

E. complexae R. A. Dyer affinis sed altiore habitu, caulibus paucioribus, spinis longioribus et spinulis minoribus, stylis multo longioribus, contortis differt.

Frutex succulentus, spinosus, e basi et superne parce ramosus, usque ad 1.5 m. altus (plerumque c. 1 m., perrariter ad 3 m.). *Rami* patuli, ascendentes, 4 (rariter 5) angulati, plerumque c. 1 cm. crassi, faciebus lateralibus leviter concavis vel planis, angulis sinuato-tuberculatis. *Podaria* truncata vel interdum emarginata, decurrentia paene ad cicatricem cymae, sed haud confluentia, atro-purpurea vel fusco-brunnea. *Spinae* aciculares binae, apice tuberculorum dispositae, divergentes, 5—7 mm. longae; spinulae binae, 1.5—2 mm. longae, c. 2 mm. supra spinas. *Foliorum* rudimenta late ovata, acuta, c. 1.5 mm. longa, cicatribus inconspicuis. *Inflorescentia* cymosa, perbrevis pedunculata; cyathia 3, horizontaliter disposita, supra podarium producta; cyathium medium masculinum, deciduum; cyathia lateraliter bisexualia, ramis cymarum c. 2 mm. longis. *Involucrum* infundibuliforme, 5—5.5 mm. diam., 3 mm. longum, lobis 5, subquadratis, fimbriatis; glandulis 5, transverse oblongis, 2.25.—3 mm latis, suberectis vel patulis, contiguus, brunneo-flavis, marginibus purpureis vel sanguineis, plerumque paulo crispis. *Flores masculini* 10, 5-fasciculati;

bracteolae filiformes integrae vel fimbriatae; bracteae fasciculares laciniatae, fimbriatae. *Ovarium* trigonum, subsessile, in cyathio inclusum; styli libre fere e basi, patuli reflexique, contorti, 3.25—4 mm. longi, apicibus capitatis, rugulosis, integris vel emarginatis. *Capsula* globoso-trigona, 3.5—4 mm. diam., 3—3.5 mm. alta, subsessilis. *Semen* subglobosum, c. 1.5 mm. diam., verrucosum, brunneum, verruculis pallidis.

Type: *L. C. Leach* 5083 (K; LISC; PRE; SRGH holotype).

Plate I.

E. malevola seems to be most closely related to *E. complexa* R. A. Dyer but is a very different plant in many ways, perhaps most noticeably, in herbarium material, in the exceptional length of the styles which almost invariably become spirally twisted. The spinescence is also different, the main spines being longer and the subsidiary spines proportionately shorter than those of *E. complexa* (in this character *E. malevola* has a less close connection with *E. isacantha* Pax than has *E. complexa*); the spine shields are more decurrent, sometimes reaching the flowering eye below.

The habit of the two species is entirely different, *E. malevola* being a much taller shrub with fewer branches from the base, its usual height is about 1 m. (Dr. I. B. Pole-Evans records a plant about 3 m. high but this is exceptional) while *E. complexa* is essentially a low (usually less than 40 cm.) densely branched plant forming large clumps, frequently with new plants a short distance from the parent, arising from branches spreading stolon-like below ground. The branches of *E. malevola*, variable in colour, have the angles closely mottled with darker colour, imparting a distinctive longitudinally striped appearance to the younger parts of the plant; the branches of *E. complexa* are a uniform green. Plate II, Fig. 1.

Plant: a spiny succulent shrub, branching from the base, sparingly branched above, up to 1.5 m. high (usually c. 1 m., exceptionally up to 3 m.). *Branches* spreading, ascending or ascending-erect (sometimes trailing on rocks), 4 (rarely 5) angled (5 angled branches are always longitudinally twisted), c. 1 cm. thick (up to 2 cm.), with the sides concave or flat, the angles sinuate-tuberculate, (old parts becoming sub-cylindric). *Spine shields* truncate, sometimes emarginate, decurrent nearly to the flowering eye below, sometimes touching it but not forming a continuous margin, dark purple or purple-brown, becoming grey with age. *Spines* needle-like, in pairs, produced at the apex of the tubercles, diverging, more or less horizontally spreading, 5—7 mm. long; subsidiary spines in pairs about 2 mm. above the main spines, 1.5—2 mm. long, one each side of the inconspicuous reiform or transversely elliptic leaf scar. *Leaves* rudimentary, broadly ovate, acute, c. 1.5 mm. long. *Inflorescence* a very shortly pedunculate cyme of 3 cyathia, produced in a plane at right-angles to the axis of the branch, from the flowering eye immediately or a little above the spine shield; bracts depressed ovate, irregularly denticulate; the central

cyathium male, deciduous; the bisexual lateral cyathia raised on cyme branches c. 2 mm. long. *Involucre* funnel shaped 5—5.5 mm. diam., 3 mm. long with 5 glands and 5 subquadrate fimbriate lobes; glands transversely oblong with a small raised lip on the inner margin, 2.25—3 mm. in their greater diam., sub-erect to spreading, contiguous, rugulose, brownish yellow with the outer margin dark purple or purplish red, frequently slightly crisped; bracts subquadrate, obtuse, irregularly denticulate, emarginate or mucronate. *Staminate flowers*: 10, each with a filiform or filiform fimbriate bracteole, arranged in 5 separate bracteate fascicles, each fascicle enveloped in a broad lacinate fimbriate bract which is attached at the sides to the wall of the involucre to about mid-way from the base, forming a pocket in which the stamens and bracteoles are inserted. *Pistillate flower*: ovary trigonous, subsessile, included in the involucre; styles 3.25—4 mm. long, free nearly to the base, spreading recurved, contorted, with entire or sometimes emarginate, capitate, rugulose apices. *Capsule* globose-trigonous, 3.5—4 mm. diam., 3—3.5 mm. high, dull green heavily marked with purple, subsessile; calyx rim-like, obtusely triangular. *Seed* verrucose, sub-globose, c. 1.5 mm. diam., yellow brown or olive brown, warts paler coloured, sometimes whitish.

In the wide distribution of the species there are naturally some deviations from the type and two subspecies can be recognised.

Subsp. **malevola**: the inflorescence of this subsp. consists of a very shortly pedunculate cyme of three cyathia which are horizontally arranged, with the bisexual lateral cyathia raised on short cyme branches; the involucre is funnel shaped with brownish yellow glands with a purple or red outer margin.

S. RHODESIA. Wankie Distr.: Victoria Falls, Sept. 19, 1940, *H. B. Christian* 381 (PRE); 5 miles S. of Inyantui Riv. Bridge, S. of Wankie, cult. at Greendale, S. Rhodesia, fl. Nov. 1962, *L. C. Leach* 5216 (SRGH). Binga Distr.: on hills in the vicinity of the Zambesi Riv. (now submerged under the waters of Lake Kariba) in Commiphora sp. association, fl. Sept. 10, 1949, *O. West* 2921 (PRE). Urungwe Distr.: Charawa Riv., c. 1500' alt., fr. Aug. 31, 1956, *L. Mullin* 53/56 (SRGH). Mtoko Distr.: 9 miles W. of Mtoko on granite slab rocks, c. 3500' alt., fl. July 23, 1959, *L. C. Leach* 9239 (COI; PRE; SRGH); 14 miles E. of Mtoko on granite outcrop, cult. at Greendale, S. Rhodesia, fl. Sept. 12, 1962, *L. C. Leach* 9939 (G; LM). Goromonzi Distr.: near "Mermaid's Pool", on granite whaleback, fl. Sept. 18, 1951, *H. Wild* 3663 (SRGH); *ibid.*, fl. July 18, 1959, *L. C. Leach* 9220 (G; K; LISC; PRE; SRGH). Chibi Distr.: "Hippo Pools", Lundi Riv., near Rhino Hotel, c. 2000' alt., fl. Nov. 1956, *L. C. Leach* 5116 (CAH; K; PRE; SRGH). Victoria Distr.: between Ngundu Halt and Triangle, c. 29 miles E. of Ngundu Halt, July 5, 1962, *I. B. Pole-Evans* 6379 (PRE); *ibid.*, Jan. 15, 1963, *L. C. Leach* 11597 (CAH; COI; G; LISC; LM; PRE); 20 miles E. of Ngundu Halt, on granite slopes, Jan. 15, 1963,

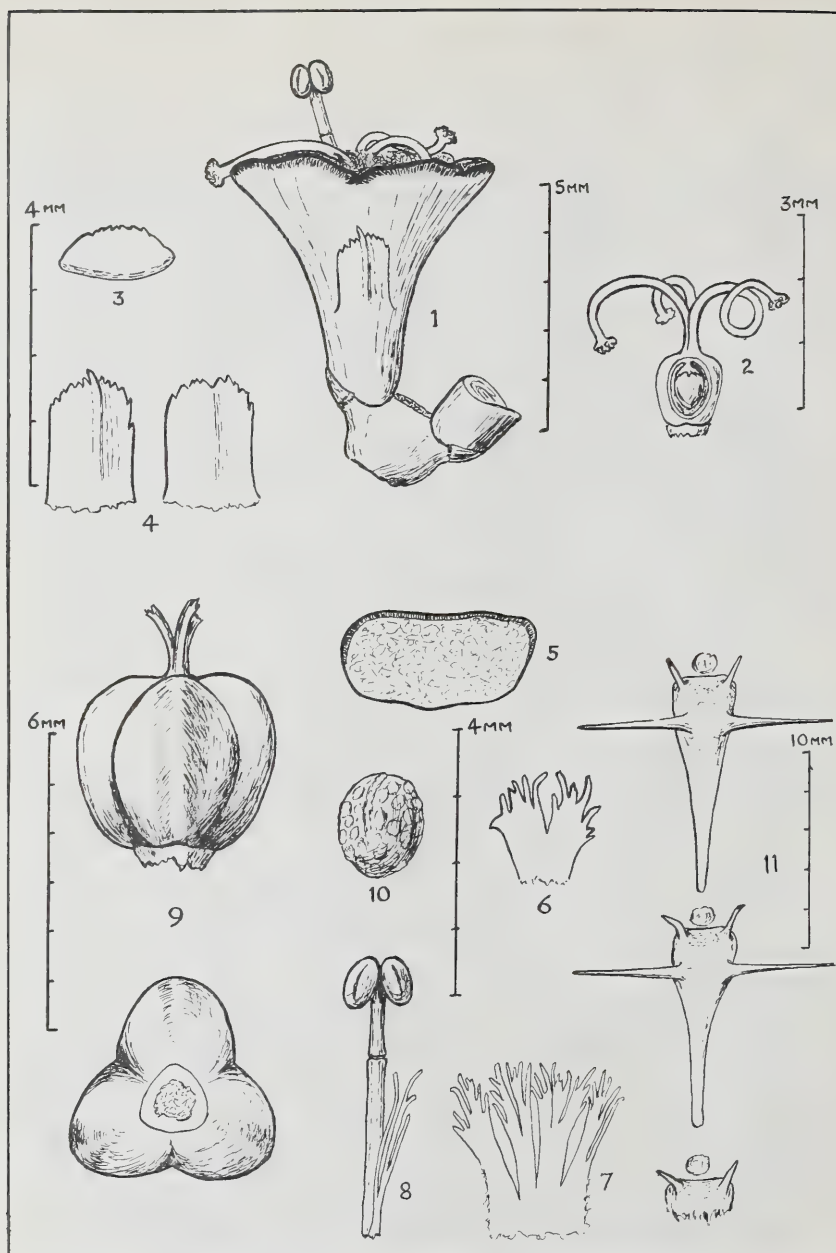


FIG. 1. *E. malevola* Leach.

1. Bisexual cyathium.
2. Pistillate flower.
3. Peduncular bract.
4. Involucral bract.
5. Involucral gland.

6. Involucral lobe.
7. Internal fascicular bract.
8. Male flower and bracteole.
9. Capsule.
10. Seed.
11. Spines and spine-shields.



PLATE I. *Euphorbia malevola* Leach.

A cutting from the Type plant, cultivated at the Division of Botany, Pretoria.



FIG. 1. Apical portions of branches shewing characteristic longitudinally striped appearance.



FIG. 2. Plants near Salisbury with weak trailing habit.



FIG. 3. Plants in the Wankie District shewing more rigid habit.

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The Type specimen, *A. A. Obermeyer* s.n., from a plant cultivated at the Division of Botany, Pretoria.

EUPHORBIA JUBATA

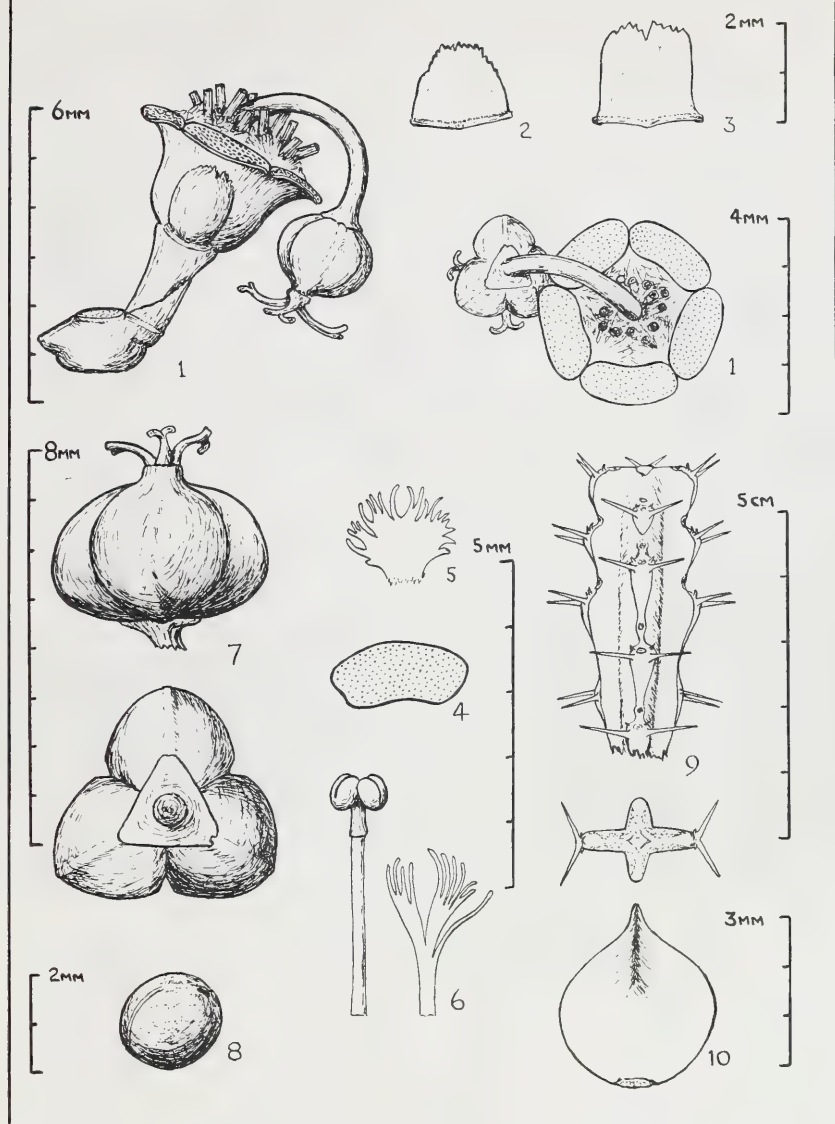


FIG. 1.

- | | |
|------------------------|--------------------------------------|
| (1) Bisexual cyathium. | (6) Staminate flower with bracteole. |
| (2) Peduncular bract. | (7) Capsule. |
| (3) Involucrel bract. | (8) Seed. |
| (4) Involucrel gland. | (9) Portion of branch with section. |
| (5) Involucrel lobe. | (10) Leaf. |

L. C. Leach 11599 (K; SRGH). Nuanetsi Distr.: 6 miles S. of Lundi Riv. on Salisbury/Beitbridge road, on granite slopes, c. 2000' alt., approx. 20° 58' S., 30° 45' E., cult. at Greendale, S. Rhodesia, fl. and fr. Aug. 27, 1962, *L. C. Leach* 5083 (K; LISC; PRE; SRGH). Ndanga Distr., Sabi/Lundi Junct., *H. Hall* s.n., cult. Nyamandhlovu, fl. June 1955, *D. C. Plowes* 1862 (SRGH). Chipinga Distr.: Selanduna Falls on the Sabi Riv. near Sabi/Lundi Junct., fl. Sept. 23, 1952, *R. C. Stock* s.n. (PRE).

N. RHODESIA. Mazabuka Distr: between Livingstone and Kalomo, July 10, 1930, *I. B. Pole-Evans* 2793 (50) (PRE: SRGH).

NYASALAND. Central Prov.: Dedza, N. of Angoni Highlands Hotel, dwarf *Brachystegia-Uapaca-Monotes* woodland, in rock clefts, alt. c. 5000', fl. Sept. 30, 1954, *P. J. Greenway* 8814 (EA; PRE). Southern Prov.: 23 miles N. of Fort Johnston, among rocks in tree shade, c. 1500' alt., cult. at Greendale, S. Rhodesia, fl. Nov. 10, 1959, *L. C. Leach* 9513 (SRGH).

A specimen from Zumbo, Tete Distr. of Moçambique: *Pedro and Pedrógão* 8311 (PRE), seems to belong here but the identification is unfortunately, not quite certain, owing to the advanced stage of the inflorescence.

It was at first thought that the distribution of the species extended into S. Tanganyika, but although they are certainly related it is now considered that plants from near Chimala (E. of Mbeya) are distinct.

Plants from the more northerly areas of the distribution frequently have only 5 male flowers, the bracteoles are often absent and the fascicular bracts are sometimes divided to the base; specimens from the higher altitudes tend to have a weaker more trailing habit than those from lower altitude localities, see Plate II Figs. 2 and 3, while the lowveld plants very occasionally have some of the spine shields united to form a partly continuous margin.

Subsp. **bechuanica** Leach, subsp. nov., a subspeciei typica cymis et cyathiis lateralibus sessilibus et saepe cyathiis 2 additis, verticaliter dispositis, involucro crateriformi et glandulis flavis sine marginibus sanguineis differt.

Type: *A. A. Obermeyer*, 1942, s.n. (K; PRE, holotype).

Plate III

The subsp. *bechuanica* differs from the type in its sessile inflorescence, shallow involucre with unmarginated glands and in its tendency to produce additional bisexual cyathia above and below the central male cyathium. The styles are perhaps even slightly longer and are rolled into an even tighter spiral than those of the type.

BECHUANALAND PROTECTORATE. "Halfway between Palapye and Francistown in sandy mopane veld" Cult. Division of Botany, Pretoria, fl. July 1937, *A. A. Obermeyer* s.n. (PRE); fl. 1942, *A. A. Obermeyer* s.n. (K; PRE).

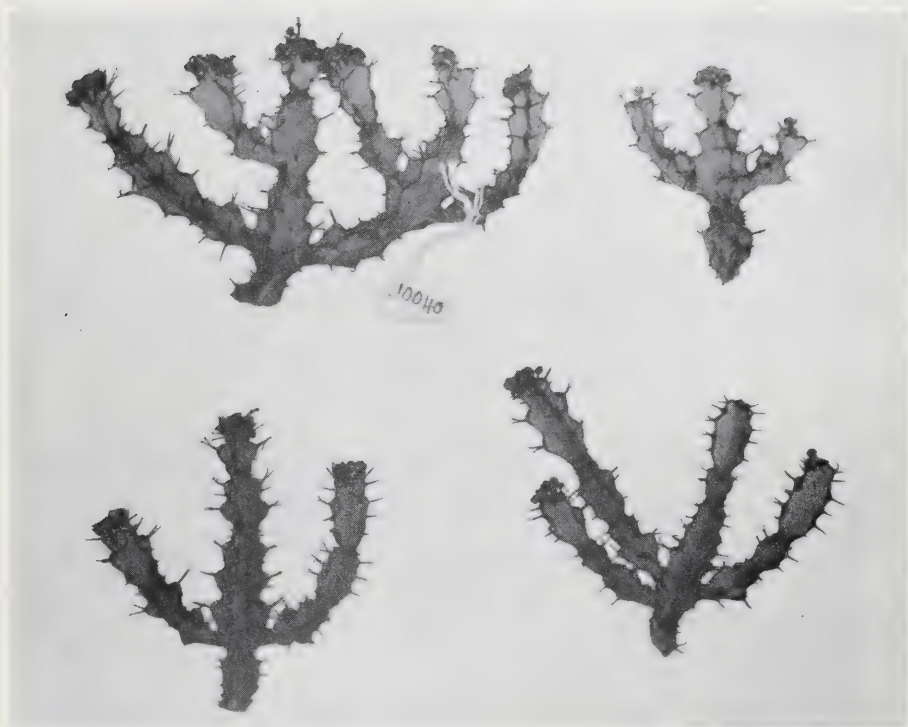


PLATE IV. *Euphorbia jubata* Leach.

Branches of a plant from near Serenje, Central Province, Northern Rhodesia, shewing the inflorescences crowded together at the apices.



FIG. 1. Branch segments from a plant collected between Mambone and Divinhé,
near the mouth of the Save River.



FIG. 2. Cultivated plant from Macuti Beach, Beira, shewing wavy wing margins.

PLATE V. *E. bougheyi* Leach.

Euphorbia jubata Leach, sp. nov.

Euphorbiae schinzii Pax affinis sed ovario pedicello longo curvato, ex involucrio exserto, ramis ramulosis, plerumque in segmenta constrictis, saepe marginibus corneis partim continuis et cymis breviter pedunculatis differt.

Frutex succulentus spinosus pumilus ramosissimus, c. 15 cm. altus. *Rami* 4-angulati (perrariter 5), profunde sulcati, plerumque in segmenta irregulariter constricti; dentes tuberculorum obtusi, saepe truncati, ad 2.5 mm. alti, 7—12 mm. distantes. *Podaria* supra producta cicatricem cymae includentia, decurrentia, saepe confluentia, pallide brunnea deinde grisea. *Spinae* binae, 4—7 mm. longae, plus minusve horizontaliter patentes, divaricatae, apice tuberculorum dispositae; cicatrices foliorum subcirculares nonnunquam spinulis binis plerumque uncinatis praeditae. *Folia* sessilia, glabra, carnosae, subcircularia vel late ovata, apiculata, leviter carinata, usque ad 3.75 mm. longa, 3.5 mm. lata, mox decidua. *Inflorescentia* cymosa, perbrevis pedunculata; pedunculus crassus, brevis, bibracteatus; bracteae late ovatae, obtusae vel truncatae, irregulariter denticulatae, c. 1.5 mm. longae; cyathia 3, horizontaliter disposita; cyathium medium nonnunquam masculinum deciduum, saepe bisexuale; cyathia lateralibus semper bisexualia, ramis cymarum 1.5—2.5 mm. longis, bracteis subquadratis, c. 2 mm. longis, obtusis, emarginatis, irregulariter denticulatis. *Involucrum* glabrum, cupuliforme, 3.5—4 mm. diam., lobis 5, transverse late ellipticis fimbriatis; glandulae 5, flavae, planae vel convexae minute foveolatae, transverse oblongo-ellipticae vel aliquantum reniformes, patulae valde contiguae. *Flores masculini* numerosi, bracteolis fimbriis filiformibus. *Ovarium* trilobatum, pedicello longo curvato ex involucrio exsertum, calyce carnosae, obtuse deltato; styli breves, crassi, patuli libri fere ad basem, apicibus rugulosis, breviter bifidis. *Capsula* obtuse trilobata, 4.5 mm. diam., c. 3 mm. alta, angulis leviter obtuse carinatis vel subacutis, inter lobos acute sulcata; pedicellus c. 5 mm. longus, leviter sulcatus. *Semen* subglobosum 1.75—2 mm. longum, flavobrunneum, laeve.

Plate I

Type: L. C. Leach and T. Brunton 10040 (G; K; PRE; SRGH holotype).

N. RHODESIA. Central Province: Serenje Distr., 2 miles W. of Serenje, approx. 30° 15' E., 13° 16' S., c. 4850' alt., among granite rocks on small kopje, *Brachystegia-Uapaca* woodland, fl. and fr. June 14, 1960, Leach and Brunton 10040 (G; K; PRE; SRGH).

Plant a spiny, succulent, dwarf shrub, c. 15 cm. high, densely branched and rebranched, somewhat pulvinate. *Branches* 4-angled (very rarely 5), c. 1.25 cm. thick excluding the tubercles, sharply longitudinally furrowed between the angles, usually slightly constricted into segments of varying length; tubercle teeth obtuse, frequently truncate on the upper slope, particularly at and towards the apex of the branches, up to 2.5 mm. high, 7—12 mm. apart along the angles. *Spine shields* extended above, along the upper slope of the tubercle

teeth, including the flowering eye, decurrent below, sometimes confluent and forming a partly continuous horny margin, pale brown becoming grey with age. *Spines* 4—7 mm. long, in pairs at the apex of the tubercles, more or less horizontally spreading, widely diverging, frequently with a pair of prickles, usually hooked, one on each side of the rather small subcircular leaf scar. *Leaves* sessile, fleshy, subcircular or broadly ovate, apiculate, lightly keeled, up to 3.75 mm. long, 3.5 mm. broad, soon deciduous. *Inflorescence* a very shortly pedunculate cyme of 3 cyathia arranged in a plane at right-angles to the axis of the branch, produced usually only at the truncate apex of the branches; peduncle .75—1.5 mm. long, 2.5 mm. diam.; bracts broadly ovate, obtuse or truncate, irregularly denticulate, c. 1.5 mm. long; central cyathium male deciduous or frequently bisexual, lateral bisexual cyathia raised on stout cyme branches 1.5—2.5 mm. long; bracts subquadrate, obtuse, emarginate irregularly denticulate, c. 2 mm. long. *Involucre* glabrous, cupuliform, 3.5—4 mm. diam., 2—2.25 mm. long, with 5 transversely broadly elliptic fimbriate lobes, c. 1.5 mm. long and 5 transversely oblong-elliptic or somewhat reniform, closely contiguous, spreading glands, 1.75—2.2 mm. in their greater diam. with their outer and end margins slightly thickened beneath, the upper surface greenish yellow, convex or flat, minutely pitted (rugulose when dried). *Staminate flowers* numerous; pedicels c. 3 mm. long, filaments c. .75 mm. long; bracteoles fimbriate with long filiform fimbria. *Pistillate flower* exserted from the involucre on a long, curved pedicel; calyx fleshy, obtusely triangular; ovary 3-lobed; ovule attached under a minutely toothed, two lobed shallow hood. Styles stout, .75—1.2 mm. long, free nearly to the thickened base, spreading, with shortly bifid rugulose apices. *Capsule* 3-lobed, c. 4.5 mm. diam., c. 3 mm. high, obtusely lightly keeled or subacute on the angles, sharply furrowed between the lobes, borne on a lightly sulcate pedicel c. 5 mm. long with a triangular calyx. *Seed* subglobose 1.75—2 mm. long, yellow brown, sometimes faintly mottled or reticulately marked with darker colour, smooth, suture very slightly raised with a dark brown line on each side.

E. jubata is known only from the type locality where plants are numerous on and among granite rocks in tree shade. It is apparently confined to one small hill where the local abundance of mosses, lichens and epiphytic orchids would seem to indicate a very moist climate. The inflorescence is usually produced only from the ultimate flowering eyes; the cyathia crowded together on the flat apices of the branches then imparting a very crested appearance to the plants.

The closest relationship of the new species appears to be with *E. schinzii* Pax, there are also close ties with *E. tetraacanthoides* Pax; both these species have the capsule barely or only partly exserted from the involucre while that of *E. jubata* is much exserted on a long, curved pedicel.

Additional cyathia, when produced, are formed in the axils of the bracts on each side of the lateral cyathia. The development of tertiary cyathia does not appear to be dependent on the abortion of the ovary of the secondary cyathium as is the case with other related species such as *E. knuthii* Pax.

Euphorbia bougheyi Leach, sp. nov.

E. dawei N.E. Br. affinis sed inflorescentia unicymosa, involucri multo majore, glandulis contiguis, valde concavis marginibus erectis, ovario in involucri incluso et capsula multo majore profunde trilobata differt.

Arbor xerophytica, spinosa, 4 m. (7) alta, truncus cylindricus, nudus, tenuis, ramis verticillatis, alatis, patulis, arcuatis, ascendentibus, versus apicem instructo. *Rami* 2—5 alati, plerumque 3, in segmenta varia, plerumque oblonga, constricti, parte media tereti, mox lignea; alae 2·5—5 cm. latae, tenuissimae, marginibus prominenter vel obscure crenatis, valde crispis; ramuli saepe 2-alati, versus apices ramorum ex marginibus alarum vel interdum ex constrictionibus producti; apices ramorum et ramulorum obtusi vel emarginati. *Podaria* parvula, plus minusve anguste elliptica, apicibus crenaturarum disposita, saepe disjuncta, interdum confluentia, spinis binis ad 7·5 mm. longis armata. *Foliorum* rudimenta ovata, deltata, acuta, recurva, reliquiis plerumque persistentibus. *Inflorescentia* axillaris, cymosa; cyma una perbrevis pedunculata, 3—5 mm. supra spinas producta, cyathiis 3, verticaliter vel oblique vel horizontaliter dispositis; pedunculus crassus, bibracteatus; bracteae plus minusve latissime ovatae, versus basem subcarnosae, plerumque scissae ad basem; cyathium medium masculinum, persistens; cyathia lateralia bisexualia, ramis cymarum crassis, brevibus; bracteae plus minusve depresso ovatae, plerumque scissae fere ad basem. *Involucrum* glabrum latissime infundibuliforme, ad 10 mm. diam., 4·5 mm. longum, lobis 5, transverse late ellipticis, irregulariter dentatis, versus basem subcarnosis; glandulae 5, flavae, rugulosae, patulae, contiguae, irregulariter plus minusve transverse anguste ellipticae, 5—5·5 mm. latae, valde carnosae, profunde concavae, marginibus erectis, margine exteriori crispato. *Flores masculini* numerosi, 5-fasciculati, bracteolis laciniatis fimbriatis; bracteae fasciculares laciniatae fimbriatae, paulo carnosae. *Ovarium* trilobatum, obovoideum, subsessile, in cyathio inclusum; calyx crassus, carnosus, crateriformis, subtrilobatus, dentatus; styli c. 3 mm. longi, libre fere ad basem. patuli reflexique, apicibus rugulosi, breviter bifidis. *Capsula* profunde trilobata, truncata, 19—23 mm. diam., 8·5—9·5 mm. alta, gynophorio crasso, ad 7 mm. longo, tandem ex involucri exserta, calyce irregulariter deltato apicibus acutis vel dentatis. *Semen* subglobosum, c. 3·75 mm. diam., laeve.

Type: A. S. Boughey 12206 (CAH; COI; G; K; LISC; LM; PRE; SRGH holotype).

MOÇAMBIQUE. Manica e Sofala; Macuti Beach, near Beira, in bud June

17, 1959, *Leach* 9154 (PRE; SRGH); between Mambone and Divinhé, fr. Sept. 2, 1961, *Leach* 11254 (CAH; COI; G; K; LISC; LM; PRE; SRGH); Macuti Beach, fr. Aug. 1962, *A. R. A. Noel* s.n. (K; PRE; SRGH); *ibid.*, fl. July 1, 1963, *R. P. Ellis* s.n. (BRLU; K; PRE; SRGH); plant collected at Macuti Beach, approx. 10° 50' S., 34° 52' E., 1958, cultivated in the University gardens, Salisbury, S. Rhodesia, fl. July 18, 1963, *A. S. Boughey* 12206 (CAH; COI; G; K; LISC; LM; PRE; SRGH).

E. bougheyi is related to *E. dawei* N.E. Br. from Uganda, but differs in having an inflorescence consisting of a single cyme and in its very much larger involucre with deeply concave contiguous glands which have both margins erect; the ovary of *E. bougheyi* is included and the very much larger capsules are deeply three lobed.

Plants occur on the swampy coastal plain of Moçambique in the Manica e Sofala District. The type locality is at Macuti Beach, just outside Beira, where the species is found growing in the evergreen coastal scrub within less than a half mile from the sea; further South the habitat of the species is in small patches of dense woodland in low lying grassland savanna near the mouth of the Save Riv. between Mambone and Divinhé. Plants are nowhere common and it seems probable that the distribution may be found to extend into the similar rather inaccessible country to both the North and South of the presently known limits.

DESCRIPTION

Plant: a xerophytic spiny tree, up to c. 7 m. high, with a nude, cylindric, relatively slender trunk, the apical portion of which is spiny and angular, with up to 9 angles, with a crown of verticillate, spreading, arcuate-ascending, winged branches; the rather small crown is 2—3 m. in diam. The *branches* have wide extremely thin wings and a central terete woody core and are constricted into segments of very variable shape and size, usually oblong (see Plate V, fig. 1), sometimes constricted only at the stalk-like base, 2—5 winged, (most frequently 3); the wings 2·5—5·0 cm. wide, with the margins prominently or obscurely crenate toothed, usually much crisped and wavy (see Plate V, fig. 2). The ultimate branchlets which are frequently 2-winged, are produced in clusters from the wing margins or occasionally from the constrictions towards the apex of the branches; the apices of the branches and branchlets obtuse or emarginate. *Spine shields* at the apex of the crenations, very small, more or less very narrowly elliptic, sometimes produced above enclosing the flowering eye in the axils of the crenations 3—5 mm. above the spine pairs, usually separate, occasionally united to form an extremely narrow continuous margin. *Spines* in pairs at the apex of the crenations, 10—25 mm. apart along the wing margins, up to 7·5 mm. long. *Leaves* rudimentary, ovate deltate, acute, recurving

between the spines, the dried remains usually persistent, when deciduous leaving a pair of minute prickles. *Inflorescence* an axillary, very shortly pedunculate single cyme of 3 cyathia; the bibracteate peduncle very stout, c. 2.5 mm. long, 4 mm. diam.; bracts more or less very broadly ovate, somewhat fleshy towards the base, c. 4 mm. long, 7 mm. broad, usually split to the base. The 3 cyathia are arranged in planes at various angles to the axis of the branch; the central cyathium male, persistent; the lateral bisexual cyathia raised on short stout cyme branches; bracts more or less depressed ovate, 3.5–5 mm. long (sometimes exceeding the glands) 7.5 mm. broad, usually split nearly to the base, with a fleshy basal ridge almost or quite encircling the involucre. *Involucre* very broadly funnel shaped, glabrous, very fleshy, up to 10 mm. diam., 4.5 mm. long, with 5 transversely broadly elliptic, irregularly dentate erect lobes, which are somewhat fleshy towards the base; the 5 glands are very fleshy, more or less irregularly transversely narrowly elliptic, 5–5.5 mm. in their greater diam., spreading, with the upper surface yellow, rugulose, deeply concave, with the margins erect, the outer somewhat crisped. *Staminate flowers* numerous (about 60), arranged in 5 bracteate fascicles, with the lacinate fimbriate bracteoles c. 4 mm. long and the broad, slightly fleshy lacinate fimbriate fascicular bracts about the same length. *Pistillate flower*: ovary 3-lobed, obovoid, subsessile, included in the involucre, with a fleshy, somewhat 3-lobed dentate calyx; the ovule is suspended under a fleshy, minutely denticulate hood; styles 2.75–3 mm. long, free almost to the base, spreading recurved, with shortly bifid rugulose apices. *Capsule* very deeply 3-lobed, 19–23 mm. diam., 8.5–9.5 mm. high, truncate, eventually exerted on a stout gynophore up to 7 mm. long; calyx irregularly deltate with the apices acute or dentate. *Seed* subglobose c. 3.75 mm. diam., smooth, cream coloured, heavily marked with violet-brown dots, suture not raised.

It is with great pleasure that the new species is named for Professor A. S. Boughey of the University College of Rhodesia and Nyasaland; it is due in no small measure to his enthusiastic encouragement of the amateur botanist that the present study of the Succulent Euphorbias of the Flora Zambesiaca area has been embarked on by the author. Prof. Boughey collected a living plant of the new species in 1958, this was successfully cultivated in the College gardens and it is from this plant that the type material was obtained.

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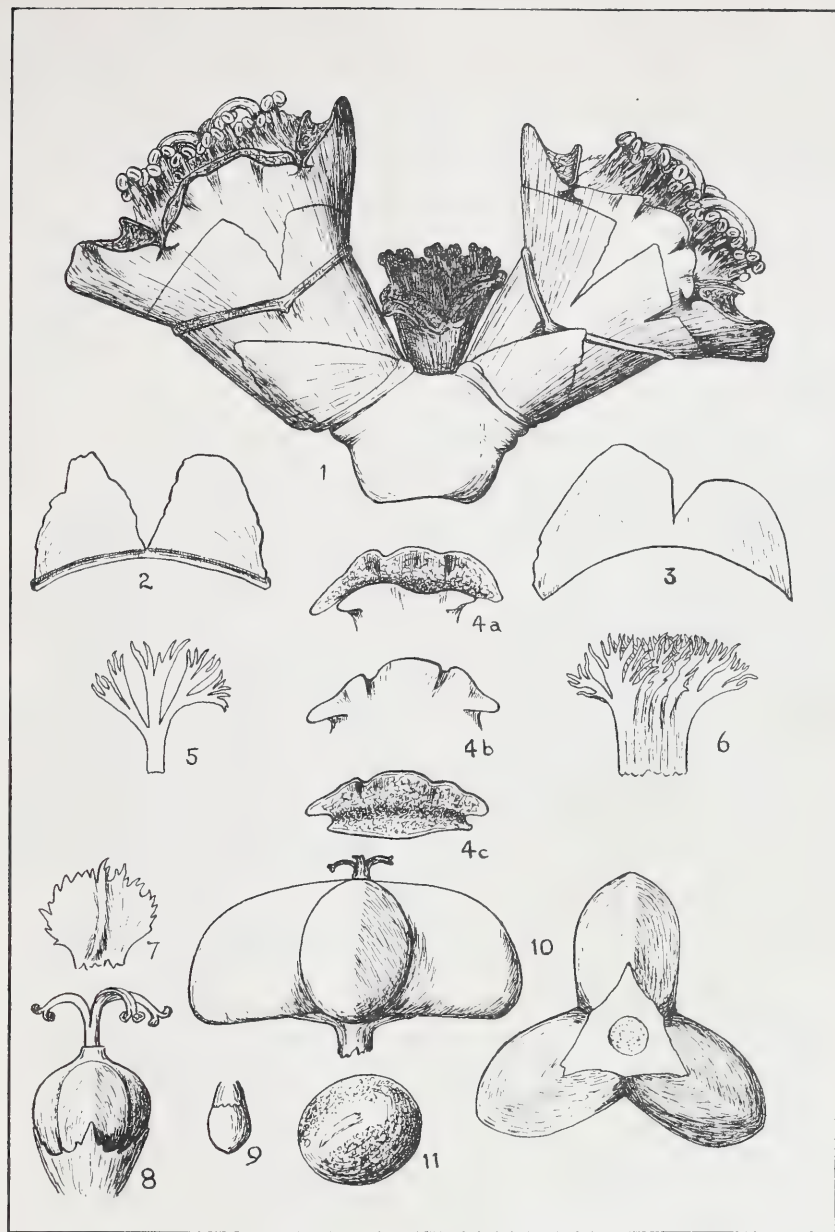


FIG. 1. *E. bougheyi* Leach.

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| (1) Cyme. | (6) Fascicular bract. |
| (2) Peduncular bract. | (7) Involucral lobe. |
| (3) Involucral bract. | (8) Ovary. |
| (4) Involucral gland. | (9) Ovule. |
| (5) Bracteole. | (10) Capsule. |
| | (11) Seed. |